

# **Silver Bow Creek/Butte Area Site**

## **Quality Assurance Project Plan for Existing Information Revision 0**

**for**

### **West Side Soils Operable Unit (OU13)**

Contract No. 68HE0318D0003

RFP No. 68HE0820R0018

Prepared for and with direction by:



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## Acronyms, Abbreviations, and Symbols

Atlantic Richfield	Atlantic Richfield Company
BMFOU	Butte Mine Flooding Operable Unit
BPSOU	Butte Priority Soils Operable Unit
CDM Smith	CDM Federal Programs Corporation
CFRSSI	Clark Fork River Superfund Site Investigations
CSM	conceptual site model
COC	contaminant of concern
DEQ	Montana Department of Environmental Quality
DM/DV	data management/data validation
DQO	data quality objective
FS	feasibility study
EPA	U.S. Environmental Protection Agency
MBMG	Montana Bureau of Mining and Geology
NPL	National Priorities List
NRD	Natural Resource Damage Program
OU	operable unit
PARCCS	precision, accuracy, representativeness, comparability, completeness, and sensitivity
PM	project manager
PRP	potentially responsible party
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
QMP	quality management plan
RI	Remedial Investigation
Rocker OU	Rocker Timber Framing and Treating Plant Operable Unit
ROD	record of decision
RPM	Remedial Project Manager
SBCBA	Silver Bow Creek/Butte Area
SOP	standard operating procedure
USGS	U.S. Geological Survey
UFP	Uniform Federal Policy
WSSOU	West Side Soils Operable Unit

## Revision Tracking Table

Revision Number	Date	Section Revised	Changes/Comments

## Section 1 Introduction

The Silver Bow Creek/Butte Area (SBCBA) Superfund Site (site) was designated in 1987 to address 100 years of mining-related contamination. The site includes seven operable units (OUs):

- Streamside Tailings OU1
- Butte Mine Flooding OU3 (BMFOU)
- Warm Springs Ponds OU4
- Rocker Timber Framing and Treating Plant OU7 (Rocker OU)
- Butte Priority Soils OU8 (BPSOU)
- Warm Springs Ponds OU12
- West Side Soils Operable Unit OU13 (WSSOU)

The site is also one of four contiguous Superfund Sites in the upper Clark Fork River Basin that extend 140 miles from the headwaters of Silver Bow Creek north of Butte to the former Milltown Reservoir near Missoula, Montana. It is immediately west of the Continental Divide in southwestern Montana, at the easternmost extent of the upper Clark Form River drainage and encompasses approximately 85 square miles, including the entire length of Silver Bow Creek and associated land contamination from Butte westward, approximately 25 miles to the Warm Springs Ponds near Anaconda.

This document is the quality assurance project plan (QAPP) for existing information at one of the seven operable units of the SBCBA site: WSSOU (OU13). A brief overview of OU13 is provided in Section 1.1. This QAPP includes guidance for the evaluation of historical information only and does not include field sampling (which is mostly complete); thus, worksheets related to field sampling are not included. The QAPP worksheets necessary for evaluating existing information are listed in Section 1.2. This existing information QAPP was prepared in accordance with the Uniform Federal Policy (UFP) QAPP manual (U.S. Environmental Protection Agency [EPA] 2005) and is compliant with EPA's QAPP guidance documents EPA QA/R-5 (EPA 2001) and EPA QA/G-5 (EPA 2002), and CDM Federal Programs Corporation's (CDM Smith's) Design and Engineering Services Quality Management Plan (QMP) for the contract dated May 17, 2019. The QAPP will be updated annually, although changing conditions may warrant out-of-cycle updates/amendments.

This QAPP governs the use of existing information within WSSOU. Work at the WSSOU entails completing the remedial investigation (RI) report (including filling data gaps), conducting a feasibility study (FS), and developing and supporting a remedy and record of decision (ROD) for the WSSOU that eliminates, reduces, or controls risks to human health and the environment. In addition, the work includes oversight of potentially responsible party (PRP), or other parties' remedial design/remedial action activities. The preparation of additional planning documents and QAPPs are scoped in the statement of work for the WSSOU.

Four Superfund Sites (Anaconda Smelter, Milltown Reservoir/Clark Fork River, Montana Pole, and SBCBA) are included in what is referred to as the Clark Fork Basin Superfund Sites (Figure 1) and extend 140 miles from the headwaters of Silver Bow Creek north of Butte to the Milltown Dam on the Clark Fork River near Missoula. These sites were listed on the National Priorities List (NPL) to address the release or threat of release of contaminants as a result of historical mining and ore-processing facilities

in Butte and Anaconda and other mining-related facilities in and along Silver Bow Creek and the upper Clark Fork River. The Milltown Reservoir Site is executed by a different contractor and Montana Pole and Treating Plant Site is essentially complete; therefore, these sites are not included in this QAPP. CDM Smith has actively worked at the Anaconda Smelter and SBCBA sites for EPA for over 25 years. Although the sites are interrelated, cleanup schedules and time frames are based on site-specific and OU-specific risk conditions.

## 1.1 WSSOU Overview

The WSSOU lies generally to the north and west of uptown Butte and includes other historical mining and metals-impacted areas outside of the BPSOU. WSSOU abuts the BPSOU and Active Mining OU to the east and the Streamside Tailings OU and Rocker OU to the south. The final boundary of the WSSOU is currently undetermined at this time. The WSSOU encompasses an area of primarily range land, with some sparse residential development. It is bisected by Interstate 15/90. Further investigation and review of environmental data will be necessary to determine the boundary of WSSOU.

## 1.2 Existing Information Worksheets

Because field sampling is not a part of the statements of work for the sites, not all UFP-QAPP worksheets are necessary. The following is a list of worksheets and their applicability:

QAPP Worksheets #1 & 2: Title and Approval Page – **Applicable**

QAPP Worksheets #3 & 5: Project Organization and QAPP Distribution – **Applicable**

QAPP Worksheets #4, 7, & 8: Personnel Qualifications and Sign-Off Sheet – **Applicable**

QAPP Worksheet #6: Communication Pathways – **Applicable**

QAPP Worksheet #9: Project Planning Session Summary – **Applicable**

QAPP Worksheet #10: Conceptual Site Model – **Applicable**

QAPP Worksheet #11: Project/Data Quality Objectives – **Applicable**

QAPP Worksheet #12: Measurement Performance Criteria – Not Applicable

QAPP Worksheet #13: Secondary Data Uses and Limitations – **Applicable**

QAPP Worksheets #14/16: Project Tasks and Schedule – **Applicable**

QAPP Worksheet #15: Project Action Limits and Laboratory-Specific Detection/Quantitation Limits – **Applicable**

QAPP Worksheet #17: Sampling Design and Rationale – Not Applicable

QAPP Worksheet #18: Sampling Locations and Methods – Not Applicable

QAPP Worksheets #19 & 30: Sample Containers, Preservation, and Hold Times – Not Applicable

QAPP Worksheet #20: Field QC Summary – Not Applicable

QAPP Worksheet #21: Field SOPs – Not Applicable

QAPP Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and Inspection – Not Applicable

QAPP Worksheet #23: Analytical SOPs – Not Applicable

QAPP Worksheet #24: Analytical Instrument Calibration – Not Applicable

QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection – Not Applicable

QAPP Worksheets #26 & 27: Sample Handling, Custody, and Disposal – Not Applicable

QAPP Worksheet #28: Analytical Quality Control and Corrective Action – Not Applicable

QAPP Worksheet #29: Project Documents and Records – Not Applicable

QAPP Worksheets #31, 32 & 33: Assessments and Corrective Action – Not Applicable

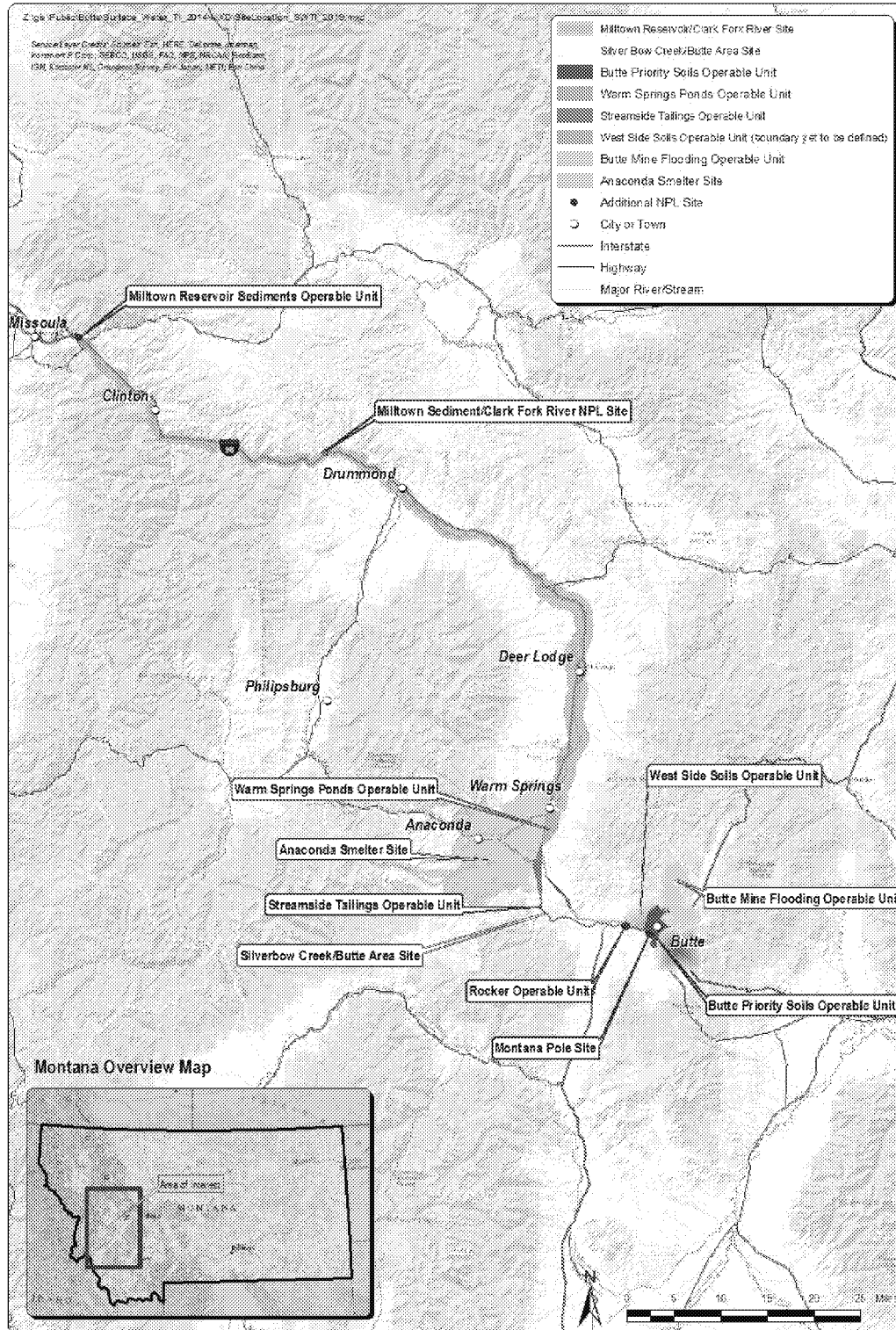
QAPP Worksheet #34: Data Verification and Validation Inputs – Not Applicable

QAPP Worksheet #35: Data Verification Procedures – Not Applicable

QAPP Worksheet #36: Data Validation Procedures – Not Applicable

QAPP Worksheet #37: Data Usability Assessment – Not Applicable

**Figure 1**  
**Location Map**  
**Clark Fork Basin Sites**



## **Section 2 Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP)**

**QAPP Worksheets #1 & 2: Title and Approval Page**  
**(UFP-QAPP Manual Section 2.1)**

QUALITY ASSURANCE PROJECT PLAN  
FOR EXISTING INFORMATION  
Revision 0  
Silver Bow Creek/Butte Area Site  
Butte-Silver Bow County, MT

West Side Soils Operable Unit (OU13)

U.S. Environmental Protection Agency Region 8

Prepared by: Bob Alexander, QA Specialist, alexanderrr@cdmsmith.com, (406) 431-1360  
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Helena, MT 59601

EPA Remedial Project Manager (RPM): Nikia Greene

Signature\_\_\_\_\_ Date\_\_\_\_\_

EPA Quality Assurance (QA) Approval Official: Frances Costanzi

Signature\_\_\_\_\_ Date\_\_\_\_\_

CDM Smith Project Manager (PM): Chapin Storrar

Signature *Chapin Storrar* Date 10/30/2020

CDM Smith QA Specialist: Bob Alexander

Signature *Robert R. Alexander* Date 10/30/20

**Dates and Titles of Plans and Reports from Relevant Investigations:**

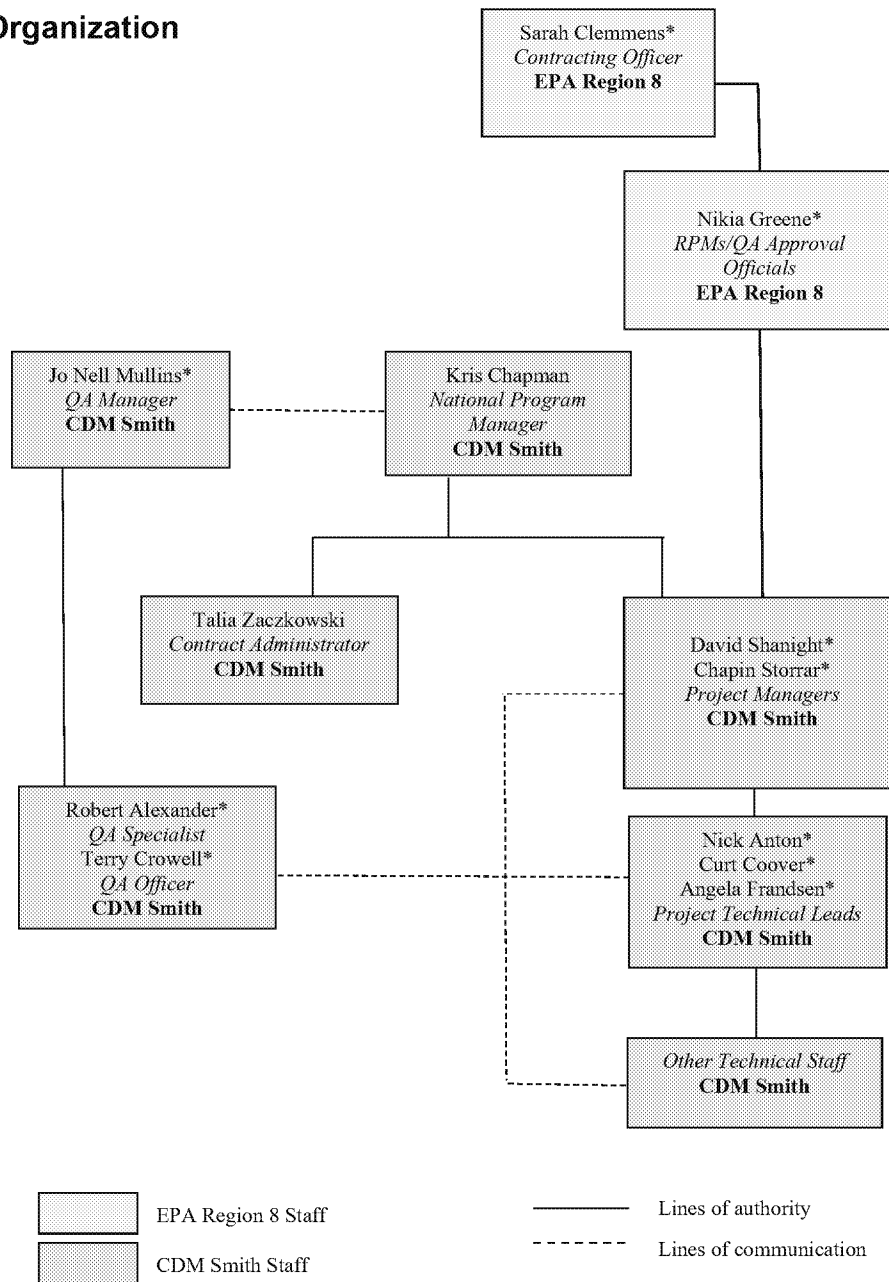
Investigations at the OUs have been taking place over the past 3 decades. Citations for relevant investigations are listed in the ROD documents below.

EPA/DEQ. 2006. *Record of Decision, Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area NPL Site, Butte, Montana*. Prepared by the U.S. Environmental Protection Agency, Montana Office. September.

EPA. 2020. *Final Quality Assurance Project Plan, West Side Soils Operable Unit Remedial Investigation Sampling, Silver Bow Creek/Butte Area Superfund Site, Silver Bow County, Montana*. Prepared by CDM Smith, Helena, Montana for the U.S. Environmental Protection Agency, Montana Office. May 28.

## QAPP Worksheets #3 & 5: Project Organization and QAPP Distribution (UFP-QAPP Manual Sections 2.3 and 2.4)

**Figure 3/5-1**  
**Project Organization**



**QAPP Worksheets #4, 7, & 8: Personnel Qualifications and Sign-Off Sheet**  
**(UFP-QAPP Manual Sections 2.3.2 – 2.3.4)**

<b>Project Personnel</b>	<b>Organization/ Title/Role</b>	<b>Signature/Date</b>
David Shanight	CDM Smith PM	
Chapin Storrar	CDM Smith PM/Project Engineer	
Greg Hayes	CDM Smith Project Engineer	
Nick Anton	Project Technical Lead	
Curt Coover	Project Technical Lead	
Angela Frandsen	Project Technical Lead	
Robert Alexander	CDM Smith QA Specialist	
Terry Crowell	CDM Smith QA Officer	
Technical Staff	CDM Smith	

Other than Hazardous Waste Operations and Emergency Response safety training, there is no specialized training or certifications needed by CDM Smith personnel to support these task orders. However, evaluating existing information requires a certain amount of experience. Therefore, in general, evaluators of existing information should meet requirements for technical reviewers, as determined by the CDM Smith PM:

- Minimum of 10 years with the subject area or degree in related technical subject area (must be a minimum grade of 5)

## QAPP Worksheet #6: Communication Pathways (UFP-QAPP Manual Section 2.4.2)

Communication Driver	Organization and Responsible Entity	Name	Contact Information Phone Number	Procedure (Timing, Pathways, Documentation, etc.)
Point of Contact with EPA RPM	CDM Smith PM	David Shanight Chapin Storrar	406-431-5083 406-431-5482	Information about the project will be sent to the EPA RPM by the PM.
Manage Field Oversight Tasks	Field Oversight Representatives	David Swanson	406-459-3950	Act as liaison to PM concerning investigation activities conducted by PRPs. Daily communication with project team and PM.
Facilitate Database Setup and Information Management Planning	CDM Smith Information Manager	Catherine Love	406-441-1445	Provide information on sample and analytical reporting groups, and types of report tables required for project.
Maintain Official QAPP	CDM Smith PM	Chapin Storrar	406-431-5482	Maintain the official, approved QAPP.
Review QAPP annually (or as determined necessary)	CDM Smith PM or their designee, and CDM Smith QA Specialist	David Shanight Robert Alexander Karen Repine	406-431-5083 406-431-1360 303-383-2331	Review the QAPP and document the review on the EPA Region 8 QA Document Review Crosswalk.
Corrective Actions	CDM Smith QA Specialist, auditor, PM, and project staff	NA (project-specific)	NA (project-specific)	QA Specialist or auditor initiates corrective action on identified issues immediately. PM ensures corrective actions completed.
Reporting of Issues Relating to PRP Analytical Data Quality (including ability to meet reporting limits, and usability of data)	Data Assessor	NA (project-specific)	NA (project-specific)	Communicate to PM as appropriate. Document situation and effect in a data quality report as appropriate. PM will elevate to EPA RPM when necessary.
Site Health and Safety Issues	Field Oversight Representatives	NA (project-specific)	NA (project-specific)	Participate in daily health and safety meetings. Communicate to PM, PRP representative, Health and Safety Manager, and other field staff as appropriate.

## QAPP Worksheet #9: Project Planning Session Summary (UFP-QAPP Manual Section 2.5.1 and Figures 9–12)

Date of planning session: September 23, 2020

Location: Conference Call

Purpose: Discuss Questions Arising During UFP-QAPP Development

### Participants:

Name	Organization	Title/Role	Email
Sarah Clemmens	EPA	EPA Contracting	<a href="mailto:clemmens.sarah@epa.gov">clemmens.sarah@epa.gov</a>
Frances Costanzi	EPA	EPA RPM/QA Approval Official	<a href="mailto:costanzi.frances@epa.gov">costanzi.frances@epa.gov</a>
David Charters	EPA	EPA Quality Assurance Manager, Office of Superfund Remediation and Technology Innovation	<a href="mailto:charters.davidw@epa.gov">charters.davidw@epa.gov</a>
Linda Himmelbauer	EPA	EPA QA – Region 8 Lead	<a href="mailto:himmelbauer.linda@epa.gov">himmelbauer.linda@epa.gov</a>
Kris Chapman	CDM Smith	National Program Manager	<a href="mailto:chapmanke@cdmsmith.com">chapmanke@cdmsmith.com</a>
David Shanight	CDM Smith	PM	<a href="mailto:shanightdt@cdmsmith.com">shanightdt@cdmsmith.com</a>
Bob Alexander	CDM Smith	QA Specialist	<a href="mailto:alexanderrr@cdmsmith.com">alexanderrr@cdmsmith.com</a>

### Notes/Comments:

CDM Smith was concerned about the rapid turnaround of a UFP-QAPP on short notice given the complexity of the SBCBA Site.

### Consensus Decisions Made:

CDM Smith is to use the QAPPs prepared in the EPA Region 8 crosswalk format, convert them to UFP-QAPP format, and reference documents as needed to address project planning and scoping. Because no field sampling is part of the scope, the sampling-related worksheets can be removed.

### Action Items:

Action	Responsible Party	Due Date
Complete UFP-QAPP for existing information for the Site	Bob Alexander	September 24, 2020

### Project Planning:

The basis for planning the objectives and content of this UFP-QAPP are included in the decision documents for the three OUs. Examples of the decision documents that will be used to direct work activities at these sites include: RODs, CDs, ROD Amendments, and Explanations of Significant

Differences. All decision documents for the OUs can be accessed on the U.S. EPA website and a link to SBCBA and WSSOU is provided below.

Silver Bow Creek/Butte Area : <https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0800416>

## **QAPP Worksheet #10: Conceptual Site Model (UFP-QAPP Manual Section 2.5.2)**

### **Site Background**

The SBCBA Site is one of the four Superfund Sites in the Clark Fork Basin. The four sites are:

- Anaconda Smelter Site
- Milltown Reservoir/Clark Fork River Site
- Montana Pole and Treating Plant Site
- SBCBA Site

These sites were listed on the NPL to address the release or threat of release of contaminants related to the mining and ore-processing facilities in Butte and Anaconda, and other mining-related facilities in and along Silver Bow Creek and the upper Clark Fork River. The four Superfund Sites in the Clark Fork Basin extend from the headwaters of Silver Bow Creek north of Butte to the Milltown Dam on the Clark Fork River near Missoula. Although the sites are interrelated, cleanup schedules and time frames are based on site-specific and OU-specific risk conditions. In some instances, these OUs are physically commingled. For example, the BMFOU addresses the bedrock groundwater system under a portion of the BPSOU. The WSSOU includes other metals-impacted areas within the SBCBA Site not addressed under the BPSOU, the BMFOU, or the Active Mining OU. In addition, the Montana Pole and Treating Plant NPL Site is located entirely within the BPSOU boundary. There is some overlap, including the mobilization and transport of contaminants of concern (COCs) to and from adjacent areas among these sites. Generally, however, these sites are studied and remediated separately and distinctly.

### **Silver Bow Creek/Butte Area Fate and Transport**

Development of OU-specific conceptual site model (CSM) for WSSOU is an element of Task 2 of the EPA SOW. However, it can be expected that the CSM for WSSOU will have similarities to the CSMs developed at other SBCBA OUs. The primary sources of contaminants in the SBCBA are mining and ore-processing wastes, which include waste rock dumps, milling wastes (i.e., tailings), and smelting wastes. The primary release mechanisms for mine wastes, tailings, and waste on railroad beds are wind erosion, infiltration, percolation, and runoff. These pathways were individually evaluated. Those that were complete and presented a significant risk to human health or ecological receptors were evaluated quantitatively in the risk assessments.

Transport of contaminants can also occur from secondary sources. These include surface soils to surface water by runoff; acid, arsenic and heavy metals to groundwater through infiltration and percolation; and contaminated dust to other media through wind erosion. Many of the site risks have been largely eliminated through EPA response actions. The significant (+) and minimal (-) human health exposure pathways are:

Residents (adults and children aged 0 to 6 years):

- Ingestion of surface soils (+)
- Ingestion of interior dust (+)
- Inhalation of fugitive dust (-)
- Ingestion of contaminated groundwater (requires concerted effort to establish pathway) (+)
- Ingestion of attic dust (requires concerted effort to establish pathway) (+)

Commercial Workers (adults):

- Ingestion of surface soils (+)
- Ingestion of interior dust (+)
- Inhalation of fugitive dust (-)

Railroad Workers (adults):

- Ingestion of surface soils (+)
- Inhalation of dust (-)

Recreational Visitors (inner-tubers):

- Ingestion of surface water (+)
- Dermal exposure to surface water (+)
- Inhalation of fugitive dust (-)

### **Remaining Problems to be Addressed at OU13**

The WSSOU is in pre-ROD investigative phases. No major remedial actions were conducted at this OU and significant investigations and remedial actions involving environmental information remain to be completed. CDM Smith is tasked with conducting the remaining investigation and cleanup scoping at this OU.

This work includes:

- Fill in data gaps remaining from the RI and complete the RI report
- Complete a human health risk assessment
- Support community involvement activities
- Initiate and complete the FS
- Provide oversight of remedial design conducted by others
- Provide oversight of remedial actions conducted by others

As the remaining investigations and cleanups proceed, if the environmental information collected by others is not consistent with an approved QAPP or other planning document, then CDM Smith will recommend corrective actions or modifications to be taken to either maintain compliance with or modify a QAPP or other planning document. These corrective actions or modifications may be documented with written correspondence to the EPA RPM, with a change order, or the field/evaluation standard operating procedures (SOPs) will need to be amended with a field change form to be consistent with an approved QAPP. If the corrective action or modification is not executed and the information collection, production, evaluation or use of the data remains inconsistent with the ROD, approved QAPP, or other planning documents, then CDM Smith, in consultation with EPA, may determine that the data/information is not of known and documented quality and may not be valid for use in decision-making.

## **QAPP Worksheet #11: Project/Data Quality Objectives (UFP-QAPP Manual Section 2.6.1)**

Mining, milling, and smelting activities conducted in the Clark Fork Basin for nearly 100 years resulted in the contamination of soils, surface water, and groundwater, primarily through disposal practices and airborne emissions. The key COCs for SBCBA are arsenic, cadmium, copper, lead, mercury, and zinc. Sites in the Clark Fork Basin were originally added to the NPL in the early 1980s, under Superfund authority, with Atlantic Richfield Company (Atlantic Richfield) identified as the primary PRP. Since then, Atlantic Richfield has been actively involved in the investigation and cleanup activities at all Clark Fork Basin Superfund Sites, and hundreds of data sets have been generated involving all media. Regulatory information, applicable criteria, action levels, and remediation goals developed for each project are specified in the RODs for each site.

In the early 1990s, Atlantic Richfield and EPA agreed to use a set of protocols that would guide the design of sample collection, field procedures for sample collection, analytical procedures, validation methods, and reporting requirements for information being collected during Clark Fork River Superfund Site Investigations (CFRSSI). These protocols were contained in the following documents prepared by Atlantic Richfield and their subcontractors:

- *Laboratory Analytical Protocol* (Atlantic Richfield 1992a)
- *Quality Assurance Project Plan* (Atlantic Richfield 1992b)
- *Standard Operating Procedures* (Atlantic Richfield 1992c)
- *Data Management/Data Validation Plan* (DM/DV Plan) (Atlantic Richfield 1992d)
- *Pilot Data Report for Organic and Inorganic Data* (Atlantic Richfield 1993)
- *Laboratory Analytical Procedure for X-Ray Fluorescence Analysis of Solid Media* (Atlantic Richfield 1995)

In 2000, changes were made through addendums to the DM/DV Plan dated June 2000 (Atlantic Richfield 2000a) and the Pilot Data Report dated July 2000 (Atlantic Richfield 2000b). The addendums provided updates (e.g., adding the use of data quality objectives [DQOs]) and validation streamlining efforts. These documents still govern data collection activities at the Clark Fork Basin Sites where CDM Smith performs work and data are being continually generated under the CFRSSI documents.

In addition, information sets generated by other entities, such as the U.S. Geological Survey (USGS) and the Montana Bureau of Mining and Geology (MBMG), may provide useful information at the site. Existing information may be obtained from many sources and must be evaluated to ensure it meets the DQOs required to support Clark Fork Basin investigation and cleanup objectives.

CDM Smith, as directed by EPA, reviews documents prepared by others and provides oversight to ensure the implementation of the remedial design and remedial action complies with the terms of the agreement under which the work is being conducted. This QAPP was prepared to provide a framework for evaluating existing information for use in EPA's decision-making processes at WSSOU. EPA guidance regarding the use of existing information was taken from EPA QA/R-5 (EPA 2001), QA/G-5 (EPA 2002), and *A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information* (EPA 2003).

**QAPP Worksheet #12: Measurement Performance Criteria**  
**(UFP-QAPP Manual Section 2.6.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

## QAPP Worksheet #13: Secondary Data Uses and Limitations (UFP-QAPP Manual Section 2.7)

The tasks presented in this QAPP do not include primary information collection efforts or site investigations performed by CDM Smith. CDM Smith will use existing information generated from sampling efforts conducted by Atlantic Richfield and information sets collected by other entities, such as MBMG, in accordance with CDM Smith's Quality Procedure 5.4, *Evaluating the Use of Existing Data* (dated July 31, 2019), and as described below. Historical information—information generated by other EPA contractors—and information from DEQ, USGS, and other miscellaneous sources were or potentially will be used by CDM Smith in support of EPA at OU13.

Information applicable to the Clark Fork River Site exists from a variety of sources, some originating as far back as the 1980s. All information considered for use will be evaluated using the five general assessment factors found in *A Summary of General Assessment Factors for Evaluating the Quality of Scientific and Technical Information* (EPA 2003).

The general assessment factors include:

- **Soundness** – Extent to which the scientific and technical procedures employed to generate the information are reasonable for, and consistent with, the intended application
- **Applicability and Utility** – Extent to which the information is relevant for the intended use
- **Clarity and Completeness** – Extent to which the clarity and completeness with which the information, assumptions, methods, quality assurance, sponsoring organizations and analyses employed to generate the information are documented
- **Uncertainty and Variability** – Extent to which the variability and uncertainty (quantitative and qualitative) in the information or in the procedures, measures, methods or models are evaluated and characterized
- **Evaluation and Review** – Extent of independent verification, validation and peer review of the information or of the procedures, measures methods or models

The appropriate level of review for any information product is necessarily related to how and in what context the information product is to be used. Therefore, the specific use of the information and these assessments factors will be addressed in all deliverables to EPA that use or reference existing information. Information generated under the CFRSSI documents is assessed against adherence to those documents for collection, documentation, and validation procedures. Figures 13-1 and 13-2, respectively, depict the information evaluation process used by CDM Smith to evaluate information generated by Atlantic Richfield and other entities involved with Clark Fork Basin Sites.

The following sections discuss the evaluation process CDM Smith will employ to assess information to be used in support of Clark Fork Basin sites. It is the responsibility of the CDM Smith PMs to ensure the appropriate evaluation process is followed and documented in CDM Smith deliverables to EPA.

### Information Generated by Atlantic Richfield

As noted in Worksheet #11, in the early 1990s, Atlantic Richfield and EPA agreed to use a set of protocols referred to as the CFRSSI documents. These documents govern information collection activities by Atlantic Richfield at all Clark Fork Basin Superfund Sites. Other information generators may also use CFRSSI documents in their sampling efforts.

Per EPA QAPP guidance, the goal of a QAPP for existing information is to establish performance or acceptance criteria that can be used to evaluate information sets for usability. CDM Smith's technical support role to EPA commonly requires evaluating and using information generated by Atlantic Richfield. Based on an agreement for information usage between Atlantic Richfield and EPA,

information acceptance criteria for Clark Fork Basin sites were defined in a February 15, 2000, EPA letter to Atlantic Richfield *Data Quality Issues for Clark Fork River Superfund Sites* (EPA 2000). Subsequently, EPA recommendations were incorporated into the DM/DV Plan Addendum and Pilot Data Report Addendum. Figure 13-1 depicts the information evaluation process used to evaluate Atlantic Richfield-generated information.

To initiate the evaluation, the following questions must be answered:

- 1) Did the information involve useful environmental or other sampling or measurement activity?
- 2) Did the information provide useful site information?
- 3) Were the Pilot Data Report (April 1993 or July 2000, as appropriate) requirements met?
- 4) Were DQOs established?
- 5) Do the information meet project DQOs in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS)?
- 6) What were the governing documents for collection of the information (e.g., were CFRSSI governing documents cited and used in whole or in part to generate the information)?

After answering the questions above, and using the Figure 13-1 flow chart, the CDM Smith information user/evaluator can categorize the extent to which a given Atlantic Richfield information set can be used at the site and document the details of this evaluation.

The following site-specific reporting elements will be included regarding information assessment documentation within a CDM Smith deliverable to EPA:

- 1) Statement identifying the category of use of the information, including its enforcement or screening status.
- 2) Summary of how the conclusion in Step 1 was reached, including a statement regarding whether the Pilot Data Report (April 1993 or July 2000 version, as appropriate) requirements were met.
- 3) Identification of the form in which the information was reported (e.g., electronic deliverable, spreadsheet, pdf report) and the source of the information (e.g., Atlantic Richfield, EPA RPM, EPA Records Center), including a statement if the information was transcribed.
- 4) Summary of the information evaluation documentation, including whether information validation and qualification were performed.
- 5) Summary of whether the Clark Fork River usability codes (i.e., enforcement “E,” screening “S,” and rejected “R” codes) were used and correctly applied to the information.

These elements will be addressed in a separate information QA section of a CDM Smith deliverable to EPA. Examples of CDM Smith deliverables requiring inclusion of a data quality assessment section include technical memoranda, reviews of data summary reports, and data interpretation reports. Unless quality issues are identified, information sets from Atlantic Richfield meeting the Pilot Data Report (April 1993 or July 2000 version, as appropriate) requirements usually can be used without restriction. Further scrutiny is necessary for information sets that do not meet the Pilot Data Report

requirements. Additionally, this section will include definitive statements regarding the soundness, completeness, and usability of the information (including limitations), and whether the information meets the objectives of the intended use in the CDM Smith deliverable. If the information was validated independently, references to this validation will be included. If the information quality checklists for Clark Fork Basin sites contained in the DM/DV Plan and Pilot Data Reports were generated, this will be referenced.

### **USGS-Generated Information**

Information from USGS typically includes water quality and surface water flow data that are frequently used at the site. USGS information will be considered acceptable for use without restrictions in the completion of the site tasks. USGS information passes through many QA reviews, including rigorous peer review, prior to approval and release to ensure the reliability, objectivity, and integrity of the information. One caveat is water quality data from USGS prior to 1996; these data should be used with caution and considered screening level, as the analytical methods were changed by USGS at that time.

When information from USGS is included in a deliverable, the following reporting elements will be included:

- 1) Source of the data (e.g., website, report)
- 2) Statement regarding whether water quality data are pre- or post-1996

### **Other Information Generators**

Information generators besides Atlantic Richfield include, but are not limited to, entities such as MBMG, other PRPs (e.g., railroads), and county governments. Other information generators include private entities or government agencies that produced historical mine maps used in the WSSOU remedial investigation. This information may or may not have been collected for purposes specific to the site; however, other information sources may not be available, or the information may be historical in nature and not repeatable. It is important to evaluate this information against the current project objectives to ensure support of EPA's decision-making processes. The evaluation of existing information will be based on review of the quality systems in place during collection, analysis, and reporting of the information. The purpose of these evaluations is to assess whether the QA activities associated with an information set meet the project DQOs. A checklist was developed to evaluate existing information for use at the site and was used to prepare Figure 13-2, which depicts the information evaluation process for non-Atlantic Richfield-generated information.

The site-specific checklist is as follows:

- 1) Identify the data and information from outside sources (other information generators) proposed for the project.
- 2) If CFRSSI governing documents were used to conduct the investigation, evaluate the information as stated in Section A7.1 for Atlantic Richfield-generated information.
- 3) Identify the decision to be made or the project objectives. Is the information useful in meeting project objectives?
- 4) Was the information generated under an approved quality plan or other sampling document?

- 5) Does this information have any constraints affecting their use (e.g., attorney/client privilege)?
- 6) Will the information be used in a decision-making process?
- 7) Do the reporting limits meet project action criteria? Was the information qualified? Is the information comparable to other accepted project information sets?
- 8) Document the analysis plan used for the acquisition of the information and evaluate the information for quality concerns and any limitations of the information relevant to the intended project use.

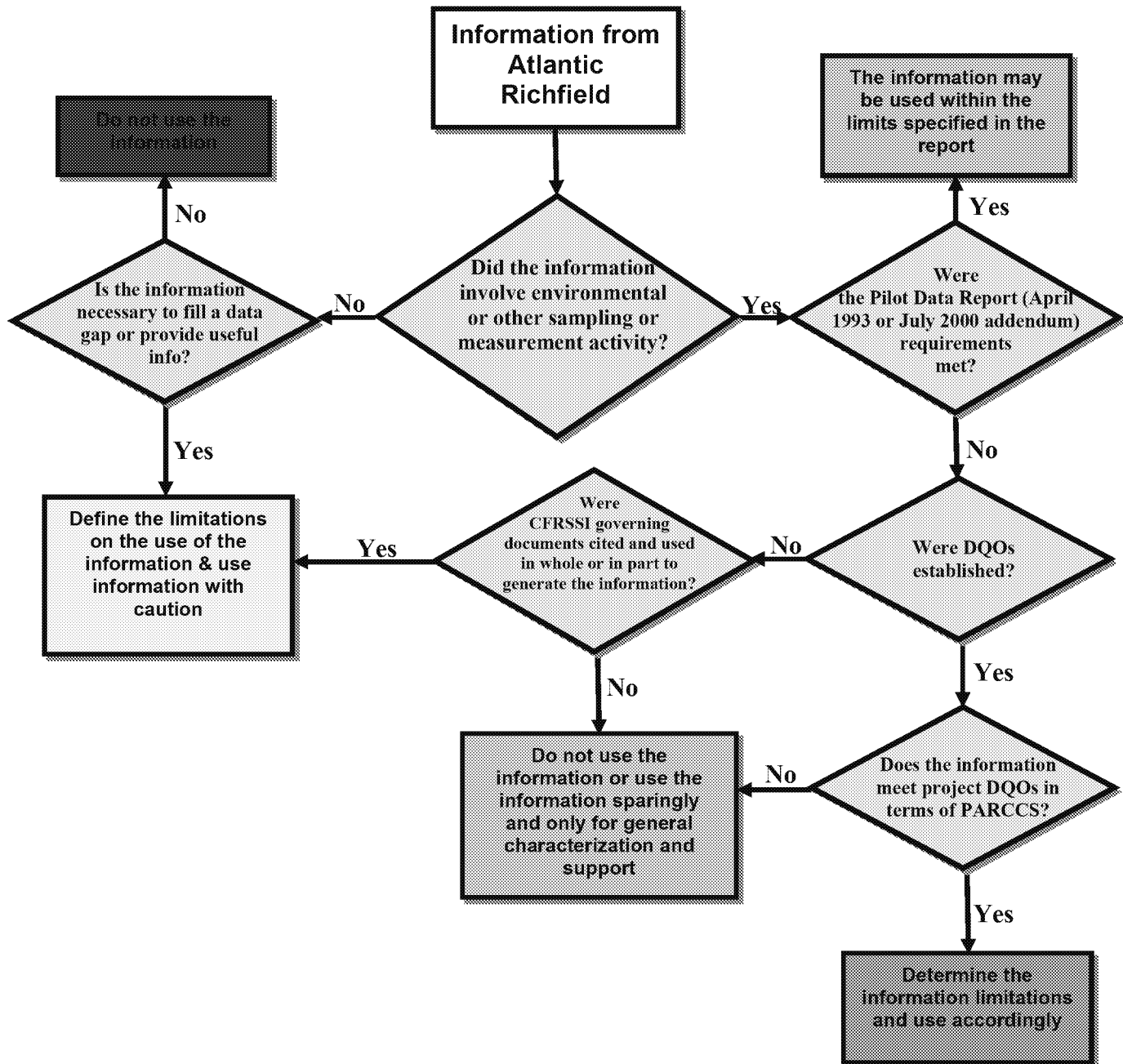
After responding to the above elements/questions, and following the Figure 13-2 flow chart, CDM Smith will describe the extent to which an alternate source information set can be utilized at Clark Fork Basin Sites and document the details and any limitations found as a result of this evaluation.

The following site-specific reporting elements must be considered and addressed by the information user/evaluator within a CDM Smith deliverable to EPA:

- 1) Identify the category of use of the information set within the site.
- 2) Summarize how the conclusion in Step 1 was reached.
- 3) Identify the format the information was reported in (e.g., electronic deliverable, spreadsheet, pdf report) and the source of the information (e.g., directly from the information generator, EPA Records Center).
- 4) Cite the QAPP or other governing document used in the investigation.
- 5) Document that the analytical methods were sufficiently sensitive to support project objectives.
- 6) Summarize the comparison of the sampling and analytical methods or SOPs to those specified for the Site (e.g., the CFRSSI SOPs). All existing information sets must be generated using the same or comparable sampling and analytical methods or SOPs.
- 7) Describe whether the information sets are complete and all necessary information is available (e.g., water quality parameters, date of sampling, composite or grab sampling).
- 8) State whether the data included laboratory qualifiers and qualifier definitions. Provide a summary of the data validation, if available.

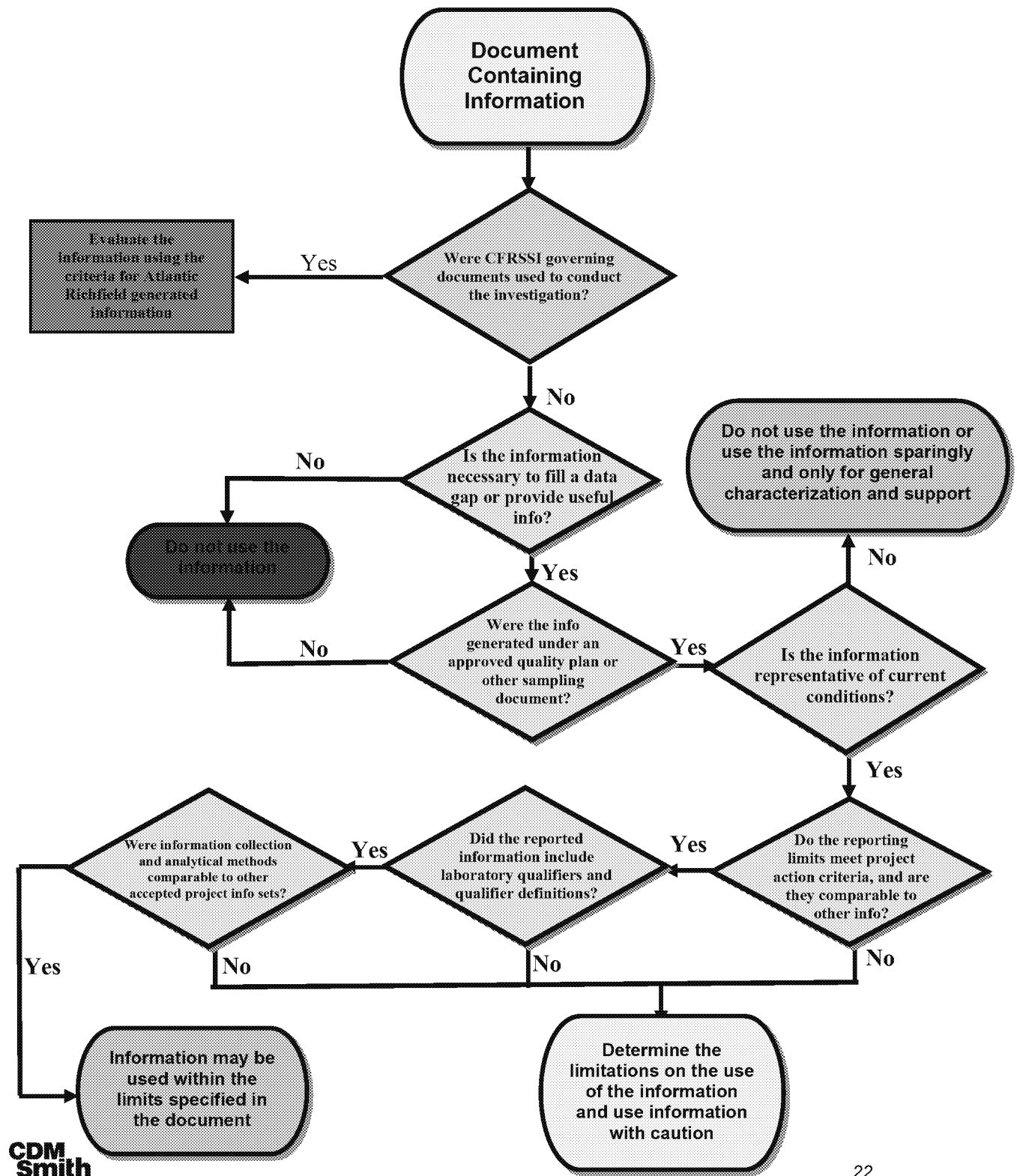
The results of the evaluation must be addressed in a separate information quality assessment section of the CDM Smith deliverable. Examples of CDM Smith deliverables requiring inclusion of an information quality assessment section include technical memoranda, evaluations of historical information, and interpretation reports. This section will include concrete statements regarding the usability of the existing information set (including limitations) and whether the information meets the objectives of the intended use in the CDM Smith deliverable. The evaluation of the existing information will be based on review of the quality systems in place during collection, analysis, and reporting of the information to determine if the information is usable in terms of the current project DQOs.

**Figure 13-1**  
**Evaluation of Existing Information from Atlantic Richfield**



**Figure 13-2**  
**Evaluation of Existing**

**Information from Other Information Generators**



## **QAPP Worksheets #14 & 16: Project Tasks & Schedule (UFP-QAPP Manual Section 2.8.2)**

### **Schedule:**

Task Order award to 9/27/2023 (base period) and 9/28/2023 to 9/27/2028 (option period)

### **Project Tasks:**

The tasks presented in this QAPP do not include primary information collection efforts or site investigations performed by CDM Smith. CDM Smith will use existing information generated from sampling efforts conducted by Atlantic Richfield and information sets collected by other entities to support EPA decision-making processes, as determined through the evaluation process for existing information presented in this QAPP. If CDM Smith is requested to conduct specific technical activities by the Remedial Project Manager(s) beyond the oversight role, a QA change form will be produced to cover the specific direction related to interpreting data or offering technical suggestions. Reference the Design and Engineering Services task order statements of work for the OU13 for specific project tasks.

### **Sampling Tasks:**

None.

### **Analysis Tasks:**

None.

### **QA/Quality Control (QC) Tasks:**

QA/QC activities, also called QA/QC measures or procedures, assist in producing quality work products and services in support of EPA.

Examples of CDM Smith's QA/QC activities include:

- Conduct technical and quality reviews of deliverables prior to submitting to EPA
- Conduct internal audits and assessments, as specified, to meet contract requirements
- Ensure that all staff understand the project QA/QC requirements such as logbook content and control
- Actively respond to quality needs, resolve problems, and properly documenting the results
- Track, review, accept, and verify corrective actions
- Conduct annual (or as determined necessary) reviews and updates of QMPs and QAPPs

### **Laboratory Quality Control:**

No laboratory analyses are included in this QAPP.

### **Secondary Information:**

Secondary or existing information will be reviewed and used as determined appropriate per Worksheet #13.

### **Information Management Tasks:**

Information management functions are mainly performed by the PRPs, with oversight from CDM Smith.

### **Documentation and Records:**

All field oversight information will be recorded in field logbooks or on electronic tablets, Global Positioning System locations documented if necessary, and all field measurements documented. Any changes that are made to the field logs or output from the tablet computers will be initialed and dated. Documents will be maintained in the project files.

### **Field Change Requests:**

CDM Smith will assist EPA with review of field change requests from the PRPs. All observed PRP deviations from the guiding documents will be recorded in the field logbook(s). As applicable, CDM Smith will notify the EPA RPM of any major changes or deviations implemented by a PRP to a QAPP.

**QAPP Worksheet #15a: Soil, Dust, and Vapor Action Levels  
at Silver Bow Creek/Butte Area  
(UFP-QAPP Manual Section 2.6.2.3 and Figure 15)**

**Matrix:** Soil, Dust, and Vapor Action Levels at Silver Bow Creek/Butte Area (actual levels for OU13 TBD)

**Analytical Group:** Soil Metals

**Soil, Dust, and Vapor Action Levels**

*Silver Bow Creek/Butte Area Site*

Contaminant of Concern	Exposure Scenario	Concentration
Lead	Residential	1,200 mg/kg
	Non-Residential	2,300 mg/kg
Arsenic	Residential	250 mg/kg
	Commercial	500 mg/kg
	Recreational	1,000 mg/kg
Mercury	Residential	147 mg/kg
	Residential (vapor)	0.43 µg/m <sup>3</sup>

mg/kg – milligrams per kilogram

µg/m<sup>3</sup> – micrograms per cubic meter

**QAPP Worksheet #15b: Groundwater Standards at Silver Bow Creek/Butte Area  
(UFP-QAPP Manual Section 2.6.2.3 and Figure 15)**

**Matrix:** Groundwater Standards at Silver Bow Creek/Butte Area (actual standards for OU13 TBD)

**Analytical Group:** Metals in Groundwater

**DEQ-7 Standards for Groundwater**  
*Silver Bow Creek/Butte Area Site*

Contaminant of Concern	Standard (Dissolved)
Arsenic	10 µg/L
Cadmium	5 µg/L
Copper	1,300 µg/L
Lead	15 µg/L
Mercury	2 µg/L
Zinc	2,000 µg/L

µg/L – micrograms per liter

**QAPP Worksheet #15c: Surface Water Quality Standards  
at Silver Bow Creek/Butte Area  
(UFP-QAPP Manual Section 2.6.2.3 and Figure 15)**

**Matrix:** Surface Water Quality Standards at Silver Bow Creek/Butte Area (actual standards for OU13 TBD)  
**Analytical Group:** Metals in Surface Water

**Surface Water Quality Standards  
Silver Bow Creek/Butte Area Site**

Contaminant of Concern	Montana DEQ-7 Standard	Standard <sup>1</sup> (Total)
Aluminum <sup>2</sup>	Acute Chronic	750 µg/L 87 µg/L
Arsenic <sup>3</sup>	Acute Chronic Human Health	340 µg/L 150 µg/L 10 µg/L
Cadmium	Acute Chronic	0.52 µg/L <sup>1</sup> 0.097 µg/L <sup>1</sup>
Copper	Acute Chronic	3.79 µg/L <sup>1</sup> 2.85 µg/L <sup>1</sup>
Iron	Chronic	1,000 µg/L
Lead	Acute Chronic Human Health	13.98 µg/L <sup>1</sup> 0.545 µg/L <sup>1</sup> 15 µg/L
Mercury	Acute Chronic Human Health	1.7 µg/L 0.91 µg/L 0.05 µg/L
Silver	Acute	0.374 µg/L <sup>1</sup>
Zinc	Acute Chronic	37 µg/L <sup>1</sup> 37 µg/L <sup>1</sup>
1. Standards for cadmium, copper, lead, silver, and zinc are hardness-dependent. Values shown are calculated at a hardness of 25 mg/L (Montana Numerical Water Quality Standards, Circular DEQ-7, February 2006). 2. DEQ-7 standards for aluminum refer to the dissolved fraction. 3. State of Montana adopted the federal standard for arsenic in January 2006.		

## QAPP Worksheet #15d: Soils Reporting Limits (UFP-QAPP Manual Section 2.6.2.3 and Figure 15)

**Matrix:** Soils Reporting Limits for WSSOU

**Analytical Group:** Metals

### Laboratory Analytical Methods and Reporting Limits for Soil Samples

Analyte	Analytical Method	Container Requirements	Preservative	Holding Times	Reporting Limits, ICP-AES (mg/kg)
Aluminum	CLP ISM02.4 (ICP-AES)	Zip-top gallon bag	Cool to 4°C ± 2°C	6 months	20
Antimony				6 months	6
Arsenic				6 months	1
Barium				6 months	20
Beryllium				6 months	0.5
Cadmium				6 months	0.5
Calcium				6 months	500
Chromium				6 months	1
Cobalt				6 months	5
Copper				6 months	2.5
Iron				6 months	10
Lead				6 months	1
Magnesium				6 months	500
Manganese				6 months	1.5
Mercury				28 Days	0.1
Molybdenum				6 months	5
Nickel				6 months	4
Potassium				6 months	500
Selenium				6 months	3.5
Silver				6 months	1
Sodium				6 months	500
Thallium				6 months	2.5
Vanadium				6 months	5
Zinc				6 months	6
ABA	Modified Sobek (Sobek et al. 1978)	1/3 of 1-gallon zip-top plastic bag	None	None	0.01
SPLP	EPA1312		None	None	Same reporting limits as Table B-4
Arsenic	IVBA*	Zip-top gallon bag	Cool to 4°C ± 2°C	6 months	1–5 µg/L (MDL)
Lead					0.1–0.3 µg/L (MDL)

ABA is reported in tons CaCo<sub>3</sub>/1000 tons.

SPLP are reported in µg/L.

DL = method detection limit for the extraction fluid using EPA Method 6020

\*The EPA SW-846 Test Method 1340 (Revision 1) was issued in February 2017 and is specific to IVBA for lead in soil. On May 5, 2017, the EPA Office of Land and Emergency Management issued a memorandum with an attached SOP (OLEM 9200.2-164) that was an update to Method 1340 to expand this method to include both lead and arsenic in soil.

## QAPP Worksheet #15e: Water Reporting Limits (UFP-QAPP Manual Section 2.6.2.3 and Figure 15)

**Matrix:** Water Reporting Limits for WSSOU

**Analytical Group:** Metals

### Laboratory Analytical Methods and Reporting Limits for Water

Analyte	Analytical Method	Container Requirements	Preservative	Holding Times	Reporting Limits
Aluminum	CLP ISM02.4	1, 500 ml high-density polyethylene (HDPE) bottle	Field filtered for dissolved metals, Cool to 4°C ±2°C/HNO <sub>3</sub> to pH <2	6 months	200 µg/L
Antimony				6 months	2 µg/L
Arsenic				6 months	1 µg/L
Barium				6 months	10 µg/L
Beryllium				6 months	1 µg/L
Cadmium				6 months	1 µg/L
Calcium				6 months	5000 µg/L
Chromium				6 months	10 µg/L
Cobalt				6 months	50 µg/L
Copper				6 months	2 µg/L
Iron				6 months	100 µg/L
Lead				6 months	1 µg/L
Magnesium				6 months	5000 µg/L
Manganese				6 months	1 µg/L
Mercury				28 days	0.2 µg/L
Molybdenum				6 months	5 µg/L
Nickel				6 months	40 µg/L
Potassium				6 months	5000 µg/L
Selenium				6 months	5 µg/L
Silver				6 months	1 µg/L
Sodium				6 months	5000 µg/L
Thallium				6 months	25 µg/L
Vanadium				6 months	50 µg/L
Zinc				6 months	2 µg/L
General Chemistry in Water					
Acidity	SM2310B	1, 1-liter HDPE bottle (verify with laboratory)	Cool to 4°C ±2°C	14 days	1.0 milligrams per liter (mg/L)
Alkalinity	SM2320B			14 days	1.0 mg/L
Chloride	SM4500			28 days	1.0 mg/L
Fluoride	SM4500F			28 days	1.0 mg/L
TDS	SM2540C			7 days	20 mg/L
TSS	SM2540D			7 days	0.5 mg/L
Sulfate	300.0			28 days	2.5 mg/L
Nitrate + Nitrite	353.2	1, 125 mL HDPE bottle	Cool to 4°C ±2°C, H <sub>2</sub> SO <sub>4</sub> to pH<2	28 days	0.5 mg/L

**QAPP Worksheet #17: Sampling Design and Rationale**  
**(UFP-QAPP Manual Section 3.1.1)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #18: Sampling Locations and Methods**  
**(UFP-QAPP Manual Section 3.1.1 and 3.1.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheets #19 & 30: Sample Containers, Preservation, and Hold Times  
(UFP-QAPP Manual Section 3.1.2.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #20: Field QC Summary**  
**(UFP-QAPP Sections 3.1.1 and 3.1.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #21: Field SOPs  
(UFP-QAPP Manual Section 3.1.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and  
Inspection  
(UFP-QAPP Manual Section 3.1.2.4)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #23: Analytical SOPs  
(UFP-QAPP Manual Section 3.2.1)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #24: Analytical Instrument Calibration**  
**(UFP-QAPP Manual Section 3.2.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing,  
and Inspection  
(UFP-QAPP Manual Section 3.2.3)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheets #26 & 27: Sample Handling, Custody, and Disposal  
(UFP-QAPP Manual Section 3.3)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #28: Analytical Quality Control and Corrective Action**  
**(UFP-QAPP Manual Section 3.4 and Tables 4, 5, and 6)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #29: Project Documents and Records**  
**(UFP-QAPP Manual Section 3.5.1)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #31, 32 & 33: Assessments and Corrective Action**  
**(UFP-QAPP Manual Sections 4.1.1 and 4.1.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #34: Data Verification and Validation Inputs**  
**(UFP-QAPP Manual Section 5.2.1 and Table 9)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #35: Data Verification Procedures  
(UFP-QAPP Manual Section 5.2.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #36: Data Validation Procedures**  
**(UFP-QAPP Manual Section 5.2.2)**

**THIS WORKSHEET IS NOT APPLICABLE**

**QAPP Worksheet #37: Data Usability Assessment**  
**(UFP-QAPP Manual Section 5.2.3 including Table 12)**

**THIS WORKSHEET IS NOT APPLICABLE**

## Section 3 References

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# **Appendix A**

## **EPA Region 8 QA Document Review Crosswalk**